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Determinants of Exclusive Breast Feeding Practices Among Mothers of Infants Aged Under Six Months in Jigjiga Town, Eastern Ethiopia: A Cross-sectional Study

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Abstract

Despite the documented evidence on the vital role of breastfeeding on the health and development of infants, the exclusive breastfeeding practice for the first six months of life is lower than the international recommendation of exclusive breast feeding practice in the world, in Africa and particularly in Ethiopia. This study is aimed to assess the determinants of exclusive breast feeding practice among mothers of infant aged under 6 months, Jigjiga town, Eastern, Ethiopia. A facility based cross-sectional study design was used to select 592 mothers with infant under 6 months in Jigjiga town. Data was collected by using interview Structured questioner. Bivariate and Multivariable logistic regression was used to check the associations and for controlling confounding.

Prevalence of exclusive breastfeeding was 54.91 %(95% CI; 50.79-58.90). Exclusive breastfeeding were more likely practiced by mothers who had infants age 0-1 [AOR= 7.29 (1.05, 10.24)], mothers who visited facilities for ANC 4 times and above [AOR=10.29 (1.41 20.12)] and mothers who received PNC [AOR=4.14(1.34, 9.48)]. The magnitude of Exclusive breastfeeding in the study area was low. Age of the infants, number of Antenatal care and postnatal care were found to be determinant factors for the continuation of exclusive breastfeeding.

Keywords: Breast feeding; Exclusive breast feeding; Antenatal Care; Postnatal Care; Jigjiga Town; Ethiopia.

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1. Introduction

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the infant's life to achieve optimal growth, development and health. The Exclusive breastfeeding is the leading preventive child survival intervention. Nearly two million lives could be saved each year through six months of exclusive breastfeeding and continued breastfeeding with appropriate complementary feeding for up to two years or longer. The lasting impact of improved feeding practices is healthy children who can achieve their full potential for growth and development [1, 2].

Based on the evidence from the world the WHO and UNICEF recommend that all mothers should breastfeed their children exclusively for the first 6 months and they should continue to breastfeed for as long as the mother and child wish, and both appropriate and sufficient weaning food should be added after six months of life [3, 4].

Extensive research in various countries has provided evidence that breastfeeding has clear health benefits for infants. Infants who have been breastfed optimally have reduced risk of common childhood illnesses such as gastrointestinal and respiratory infections, otitis media, atopic eczema, allergy as well as all-cause and infection-related neonatal mortalities [3, 5, 6].

Despite the well-known benefits of EBF, globally only 35% of children less than 6 months of age are exclusively breastfeed and in the developing world, less than 40 per cent of infants under 6 months old receive the benefit of exclusive breastfeeding. The rate is particularly low in Africa, where less than one third of infants under 6 months old are exclusively breastfed [3, 7].

Although breastfeeding seems universal in Ethiopia but the prevalence of prevalence of exclusive breast feeding is below the WHO recommendation as different studies in the country indicated [8-10].

\The low prevalence of exclusive breast feeding in the world including Ethiopia was due to maternal and child factors such as traditional and cultural beliefs of the mothers, low educational level of the mothers, economics of the mother, type of delivery, poor maternal knowledge, parity, antenatal service utilization, Maternal marital status and place of deliver and age of the infant [11-13].

These suboptimal feeding of infant and infectious diseases contributes to 60% of total children death, of which two-third resulted from suboptimal breast feeding and in developing world suboptimal breastfeeding contributes for 45% of neonatal infectious deaths, 30% of diarrheal deaths and 18% of acute respiratory deaths among under five children [14].

In Ethiopia an estimated 70,000 infant deaths per year which is 24% of the total infant death annually are due to suboptimal breastfeeding practices, in which can be prevented by exclusive breastfeeding.

And According to the 2011 EDHS, the country has history of suboptimal breast practice, only 52 % of children under six months age are exclusively breastfeed [8, 15].

Even though the information of exclusive breastfeeding practice in Ethiopia is available, but the information available on prevalence and factors associated with exclusive breastfeeding practice in Somali regions is limited. Therefore, this study aimed to identifying the prevalence and factors associated with exclusive breastfeeding in the jigjiga town, Somali region, Easter Ethiopia.

2. Methods

2.1. Study area, design and period

The study was conducted in Somali Regional State of Ethiopia specifically in the jigjig town. Jigjig town is capital city of the Somali region and its located Eastern of Ethiopia. It is situated at a distance of 621 km away from Addis Ababa.

The total population of the city is 967,652 out of this 526,397 are male and441, 254 are female. (2007 census). The city has 3 health centers, one regional hospital, and 12 private clinics, among these facilities 6 of them working maternal and child care. And the study was conducted using Facility based cross-sectional study design from February 22 to march 20, 2017.

2.2. Source and study populations

The source population of this study was all mothers of infants aged under six months residing jigjiga town. While the study population was all randomly selected mothers of infants aged under six months who visited the selected facilities. And the study was included those mothers who brought their infants to the facilities and was excluded the care givers beside mothers who brought infants to facilities as well as Mothers who came from outside study area of jigjiga town.

2.3. Sample size determination

sample size was determined using single proportion population formula ($n = (Z\alpha/2)2\ p\ (1-p)/d2$) by considering the following assumptions: Proportion of EBF 52 % [4], 95% level of confidence and 5% marginal error and The final sample size was adjusted using the design effect of 1.5% and 3% non-response rate, the final sample size was 592.

2.4. Sampling techniques and procedures

First Lists of all health facilities offering immunization, in patients and out patients services to the children was obtained from Somali regional health bureau to capture mothers with infants aged under 6 months and The types of health facilities that remained in the sampling frame was regional hospital, health centers and private clinics. Since there was heterogeneity between hospitals, health centers and private owned facilities, the facilities classified strata of hospitals, health centers and private facilities.

Then simple randomly method was used to select facilities. Then Available flow statics in each facility was

obtained from each facility to get average monthly facilities visited numbers of mothers with infants aged under 6 months and average monthly facilities visited numbers served as each facility's population size then facilities was sampled by using proportional allocation to size (PAS). And systematic random sample was used to select study subject during data collection by divided the total average monthly facilities visit numbers to total sample size to get K number which was 1200/585=2 then every 3rd mother who visited health facilities was selected and interviewed until estimated sample size was achieved from each facilities.

2.5 Data collection procedures

The Questionnaire was translated from English to local language Somali and translated back to English by fluent Speakers of the two languages. The questionnaire was pre-tested three percent of the total sample size before it was used in actual data collection outside study area. Data were collected by using pretested structured questionnaire adapted from EDHS and was conducted Using a structured interview administered questionnaire of mother with an eligible infant based on socio demographic, economic characteristics, maternal health service related characteristics, obstetric characteristics, and infant related characteristics on exclusive breastfeeding. Data were collected by Three BSC data collectors and one BSC supervisor with previous experience of data collection was recruited to participate in data collection and was selected from those residing in the study area and fluently speak local language. The data collectors and supervisor were trained on the purpose of study, how to handle questionnaires, how to conduct data collection, how to ask questions and record responses.

2.6. Study variables and data measurement

The dependents variables of this study was Maternal related factors (Age of the mother, marital status, Education of the mother, Occupation of the mother, income of the mothers, Religion, maternal parity, mothers Exposure to information about breastfeeding and maternal illness), Obstetrics and facility related factors **(**place of delivery, Breast feeding formation (counseling), Mode of delivery, Parity, ANC, Postnatal care) and Infant related factors (infant Age, Sex, Timely initiation of breastfeeding, Pre-lacteal feeding status and Infant health) and exclusive breastfeeding was operationally defined as the proportion of infants aged under 6 months who fed only breast milk with the exception ordered medicines and vitamins by health professionals one day (24hrs) before the survey was conducted.

2.7. Data Processing and analysis

The data was entered and cleaned using Epi data version 3.1 and analyzed by STATA statistical software version 14. Descriptive summary statistics such as frequencies, percentages, means, standard deviation and median was used to summarize different characteristics' of the study participants. Bivariate analysis was performed on the predictor variables, and the simple binary logistic regression was employed to calculate crude odds ratio to identify variables associated with exclusive breastfeeding practice and to select variables for the multivariable logistic regression analysis. Multivariate logistic regression was used to control for confounding variables. Adjusted odds ratio (AOR) with 95%confidence interval was estimate to investigate the association between the dependent and independent variable. Variables with p-value ≤ 0.2 in the bivariate analysis was

taken to the multivariable analysis, In the multivariate regression model p- value of < 0.05 was used as a measure of statistical significance. Those variables with p-value of < 0.05 was confirmed to be the independent predictors of exclusive breastfeeding

3. Result

3.1. Socio demographic characteristics of the participants

Table 1: Socio-demographic characteristics of study participants (570), jigjiga town, Somali Regional State, Easter hararge, Ethiopia, June, 2017.

characteristic	Frequency	%
Age of mother		
15-24	289	51.05
25-34	243	42.63
35-44	38	6.31
Ethnicity of the mothers		
Somali	499	87.54
Amhara	27	4.73
Oromo	21	3.68
Gurage	14	2.46
Tigre	7	1.23
Others	2	0.35
Religion of the mothers		
Muslim	526	92.28
Orthodox	28	4.91
Protestants	10	1.75
others	6	1.05
Level of education (among attended)		
Illiterate	349	61.23
Literate	221	39.77
Marital status		
Single	5	0.88
married	511	89.65
divorced	34	5.96
widowed	20	3.51
Occupation of the mother		
House wife	458	80.35
Daily laborer	35	6.14
Governmental organization employee	35	6.14
merchant	18	3.16
Private organization employee	14	2.47
Student	10	1.75
Wealth index		
poorest	114	20
poor	113	19.82
medium	117	20.53
Wealth	113	19.82
wealthiest	113	19.82

From the total number of 592 mothers with infants aged under six, 570 respondents were enrolled in the study, yielding the response rate of 96.28%. The mean age of the mothers were 25(5.49± SD) years. Majority of the mothers were Somali Ethnicity 87.54%, Muslims in religion (92.28%), Majority 511 (89.65%) of them were

married. while most of them 458(80.35%) were house wives. With regard to educational status, more than half of the mothers (61.23%) were illiterate.

3.2. Maternal health service utilization and infant related factors

Table 2: Maternal health service utilization and Infant related factors in jigjiga town, Somali regional state, Eastern harrage, Ethiopia, June 20017.

Characteristic	Frequency	%
Number of children mothers had		
≤2 children	189	33.16
3-4 children	219	38.14
≥5 children	162	28.42
ANC services		
Yes	366	64.21
No	204	35.79
Place of ANC received.		
Governmental hospital	143	39.07
Health centers	111	30.33
Private clinics	101	27.60
Health post	11	3.01
Number of ANC		
Once	46	12.56
Two times	86	23.50
Three times	85	23.22
Four times and above	149	40.71
Breast feeding counselling during ANC service.		
Yes	233	63.66
No	133	36.33
Place of delivery		
Governmental hospital	194	34.04
Health centers	161	28.25
Private clinics	140	24.56
Health post	12	2.1
Home	63	11.05
Mode of delivery		
Normal/vaginal	516	90.53
C/S	54	9.47
Sex of the infant		
female	302	52.98
male	268	47.02
Postnatal care service		
Yes	202	35.44
No	368	64.56
Place of postnatal care received.		
Governmental hospital	98	48.51
Health centers	53	26.24
Private clinics	46	22.77
Health post	5	2.48
Counselling regarding BF and CPF during PNC		
Yes	163	80.69
No	40	19.31

About 289 (38.14%) of mothers had 3-4 children, with mean number of infants that mothers had were 3.7(2.32± SD). A 366(64.21%) of Mothers received ANC service during her pregnancy.

The highest number of ANC visits of the mothers were four times and above 149 (40.71%). Five hundred and seven mothers (88.94%) were s give birth at heath facilities, while majority of them 194(34.04%) gave birth at governmental hospitals.

almost all of the mothers 516(93.53%) delivered by Normal/vaginal. Female infants were 302(52.98%) while male infants were 268(47.02%) yielding female to male sex ratio of 1.12:1. About 202(35.44) of the mothers were received PNC, among these a 163 (80.69%) of them were counseled about breast feeding and complementary feeding.

3.3. Breast feeding practice and related factors

Three hundred eight four (67.37%) of the mothers put their infants at breast immediately with in the 1st hr of delivery. A large number of mothers 401 (70.35%) fed first milk/colostrum to their infants. Almost all of the mothers 556 (97.54%) with index infant were ever breast fed their infants at some point of time but those who remained to breast fed exclusively were 313 (54.91%) as measured by 24 hour recall, which makes The overall prevalence of exclusive breastfeeding 54.91%. those who didn't feed their infants breast milk, alternatively highest fed was infant formula 127(49.42%). While reasons not to breast fed were decreased breast milk 155 (60.55%).

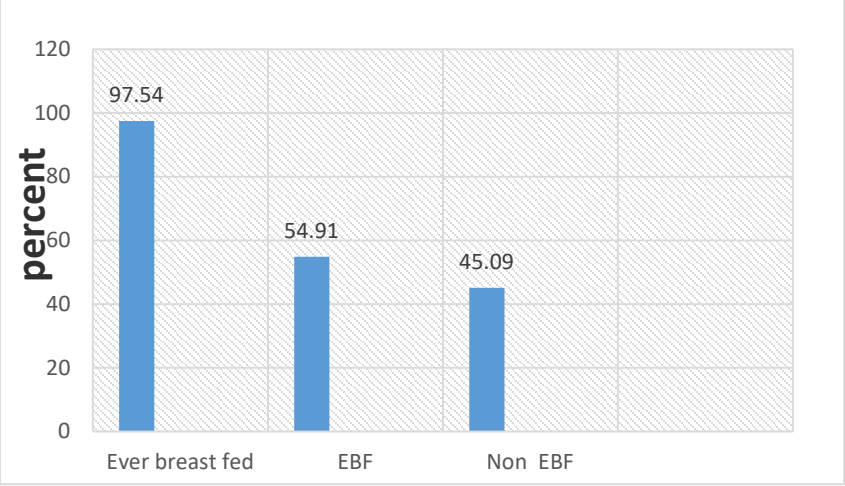

Figure 1: Prevalence of infants who ever breast fed and those infants who breast feed exclusively in the first 6 months of life, Jigjiga town, Easter harrage, Ethiopia, June 2017.

3.4. Determinants of exclusive breastfeeding

To identify factors associated with exclusive breastfeeding practice, each variable were assessed independently whether they were predictor of EBF practice or not. First variables bivariate analysis was done to test for significant associations between independent variables and exclusive breastfeeding as determined by 24 hours

recall method.

Variables which were associated in the bivariate logistic regression analysis (P≤0.2) were: age of the mothers, wealth index of the house hold, ANC service, number of ANC, facilities which mothers received ANC, mode of delivery, age of infant, sex of the infants, PNC services , counseling about breast feeding and complementary feeding during PNC postnatal care , mode of delivery, place of delivery, time of initiation of the breast feeding, first milk/colostrum feeding. Variables which were associated in the bivariate analysis were tested in the final multivariate analysis to see their significant association with exclusive breastfeeding practice. After adjusting for potential confounders in multivariate logistic regression analysis; only age of the infant, , number of ANC visits, PNC ,were significant associated with breast feeding based on p≤0.05.

Table 3: Multivariable logistic regression analysis of factors associated with exclusive breastfeeding among mothers (n = 570) with infants aged under 6 months in jigjiga town, Ethiopian Somali regional state, Eastern harrage, Ethiopia, June 2017.

characteristic	EBF		COR(95%CI)	AOR(95%CI)
	Yes	No		
Mothers age				
15-24 years	137(43.77)	158(61.48)	1	
25-34 years	148(47.28)	95(35.80)	1.88(1.33 , 2.68)*	
35-49 years	28(8.95)	4(1.56)	7.76(2.65, 22.7)*	
Wealth index.				
Poorest	36 (11.50)	78 (30.35)	1	
Poor	61 (19.49)	52(20.23)	2.56 (1.48 ,4.42)*	
Median	78(24.92)	39(15.18)	4.52 (2.57,7.94)*	
Wealth	69(22.04)	44(17.12)	3.46(1.98 6.02)*	
wealthiest	69(22.04)	44(17.12)	3.27(1.89 ,5.66)*	
ANC follow up.				
No	69(22.04)	135(52.53)	1	
Yes	244(77.96)	122(47.47)	3.93 (2.72 ,5.68)*	
Place of ANC follow up.				
Private clinics	42(17.21)	59(46.36)	1	
Governmental hospital	113(46.31)	30(24.59)	5.58(3.12 9.96)*	
Health centers	79(32.38)	32(26.23)	3.4(1.90 6.05)*	
Health post	10(4.10)	1(0.82)	13.33(1.64,108.25*	
Number of ANC follow up.				
Once	24 (9.84)	23 (18.86)	1	1`
2times	34 (13.93)	52 (42.62)	0.66(0.31 ,1.39)*	9.09(1.03 79.79)
3 times	65 (26.64)	21 (17.21)	2.95(1.36 ,6.41)*	2.64(0.39 17.62)
4times and above	121(49.59)	26(21.31)	4.89(2.33 ,10.26)*	10.29(1.41 20.12)**
Place of delivery				
Home delivery	36 (11.50)	27(10.51)	1	
Governmental hospital	137(43.77)	57 (22.18)	2.05(1.13 3.70)*	

Health centers	93(29.71)	68 (26.46)	1.16(0.63 2.12)*	
Health posts	7 (2.24)	5 (1.94)	3.29(0.64 ,16.78)*	
Private clinics	40 (12.78)	100(38.91)	0.42(0.23 ,0.78)*	
Mode of delivery				
c/s	18 (5.75)	36(14.01)	1	
Normal/vaginal	295(94.25)	221(85.99)	2.57(1.41 ,4.70)*	
Age of the infant				
0-1 months	57 (18.21)	26(10.12)	3.18(1.85,5.44)*	7.29(1.05 10.24)**
2-3 months	147(46.96)	75 (29.18)	2.69(1.85 ,3.92)*	2.22(0.61 8.11)
4-5 months	109(34.82)	156(60.70)	1	1
Sex of the infant				
female	128(40.89)	174(67.70)	1	
male	185(59.11)	83 (32.30)	3 (2.11, 4.20*	
PNC service				
No	150(47.92)	218(84.82)	1	1
Yes	163(52.08)	39(15.18)	5.86(3.89 ,8.84)*	4.14(1.34 9.48)**
Counseling during PNC				
No	26(15.95)	13(33.33)	1	
Yes	137(84.05)	26(66.67)	2.74(1.24 ,6.04))*	
Time of BF initiation.				
immediately with in the 1st hr	256(81.79)	128(49.81)	1..06(2.01 ,8.22)*	
1hr up - 1sday	38 (12.14)	99 (38.52)	0.27 (0.072,1.0)*	
After 1st days -3 days	13(4.15)	25(9.73)	0.34(0.082,1.45)*	
After 3 days	6 (1.92)	5(1.95)	1	
Colostrum Fed.				
No	40(12.78)	129(49.81)	1	
Yes	273(87.22)	128(50.19)	6.76(4.46,10.26)*	

1=reference *= Significant at p-value of ≤ 0.2 & ** Significant at p-value of ≤0.05

4. Discussion

The rate of exclusive breast feeding in this study area was 54.91 %(95% CI; 50.79-58.90). This result is comparable to the 2011 Ethiopian DHS report 52% [8]. but the finding was lower than studies from Nepal 60.5% [16],Srilanka 75% [17], Enderta district of Southern region 70.2% [18], Debre Berhan district 68.6% [11]. These results show variations of EBF prevalence between countries and Regions over time, in addition

methodological variations between studies may contribute the difference, since most of these studies were community based while this was institutional based and other contributed factors could be dissimilarities in infant and other different could be resulted from maternal socio-demographic characteristics like age of infant and maternal sociocultural, economical, health and health service utilization characteristics between respondents of the referenced areas and the study place .

As the age of the child increases the rate of EBF decreased significantly as this study revealed that age of the infants was one of determinant factor for continuation of Breast feeding, mothers with infants aged between 0-1 were 7.29 times more likely to breast fed compared to older infant. This finding was in conformity with some studies done in Singapore [6], Cameroon [9], Uganda [19] and study done in 9 regions of Ethiopia [3].This could be due that mothers assuming breast milk alone would not be sufficient for infants once they are get older. In the case of this study, around 61 % of those mothers who didn't fed breast milk in the preceding day, the reason behind not to breast fed was decreased breast milk.

It can also be attributed to the fact that post-partum care traditionally is given in the first few months when mothers are confined at home, creating an opportunity to exclusively breastfeed their child.

ANC follow-up were positively associated with EBF practice.

Mothers who had four and more ANC visit had higher chance of tenfold to practice EBF than those had less ANC visits.

This is consistent with other study findings from Nigeria [20] and study done in Mecha district of Ethiopia [10]. which revealed that mothers who visited health professionals, or made 4 or more significantly more likely to exclusively breastfeed their babies than those who didn't made any visits or less visits to the facilities.

The possible reason might be mothers who visited health facilities get counseled about breast feeding and those visited more get adequate knowledge about breast feeding which in turn led mothers to breast feed their infant exclusively.

The other possible explanation could be the availability of breastfeeding guidelines and training for health facilities staff on infant feeding which contributed to have better knowledge and skills of counselling on EBF among health workers.

Postnatal care is independent determinant factor for exclusive breast feeding; showing that mothers who received postnatal care had higher chance 4.14 times of exclusive breast feeding practice compared to those mothers who didn't receive postnatal care, this is in line to study in Debra Berhan district (11), Enderta district of Ethiopia (18), and study done in Easter district of Dolo ado (21).

This could be that breast feeding counselling provided during postnatal period could positively influence mothers EBF practice, since it is the most appropriate time for delivering key infant and young child feeding messages which enable to take immediate action.

5. Conclusion

The magnitude of Exclusive Breastfeeding Practice in the study was Comparable to the national figure of Exclusive breast feeding practice Revealed by Ethiopian demography health survey.

Mothers with Youngest infant age, having 4 and more antenatal visit during pregnancy by mothers, receiving postnatal care after bitrth by the mothers were found to breast fed exclusively.

it is recommended that policy makers should look into the issue to give more emphasis in the promotion of EBF through Making BF counseling which is very important part of all maternal and child health services such as ANC, PNC to give health education and counseling for mothers that can improve their BF knowledge in turn to improve their EBF practice.

6. Recommendation

Health professionals should strengths and maintain the provision of ANC and PNC, since it's the most important and appropriate time to deliver breast feeding message and information to the mothers.

Breastfeeding promotion messages for mothers offered should emphasize the breast feeding benefits as maternal and child morbidity influenced the practice of EBF; correct knowledge on breastfeeding issues particularly the health benefits of exclusive breastfeeding.

7. Limitation of the study

This study lacks the generalizability of the result to the whole community since it was facility based study. Also it may overestimate the prevalence of EBF since the prevalence was determined using one-day infant diet recall method. Due to the Cross-sectional study design we used, it's impossible to classify which precedes the others (breast feeding or other predictor variables) and does not show cause-effect relationship between dependent and independent variables.

8. Acronyms.

EBF: Exclusive breast feeding practice,

ANC: Antenatal care, PNC: Postnatal care, EDHS: Ethiopian demographic health survey, WHO: World health organization, AOR: Adjusted odd ratio, COR: Crude odd ratio.

9. Competing interest

Author declared that he has no competing interest.

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